

ASBESTOS

INTRODUCTION

- Naturally occurring mineral
- Fibrous in structure
- Different types
- Of the different types, 95% is either chrysotile (white) or amosite (brown)

POSITIVE THINGS ABOUT ASBESTOS

- Good insulator (heat and electricity)
- Good strength
- Resistant to corrosives
- Doesn't burn
- Inexpensive

USES PRIOR TO 1980

- | | |
|-----------------------------|--------------------------------|
| • Ceiling tiles | • Vibration dampers |
| • Drywall taping compound | • Cement sheet (transite) |
| • Adhesives and mastics | • Floor tile |
| • Thermal system insulation | • Valve packing and insulation |
| • Roofing felts | • Fire resistant drywall |
| • Gaskets | • Sprayed on fireproofing |

HEALTH CONCERNS

- Danger when inhaled or swallowed
- Asbestosis: scarring of the lung / 20 year latency period
- Lung Cancer: 20-30 year latency period
- Mesothelioma: cancer of the lining of the lung / 30 year latency period
- Cancer of the digestive tract

EXPOSURE LEVELS

- Increased risk to those exposed to asbestos during the course of their work
- Cannot state that there is a threshold below which risk of cancer is not increased
- OSHA 8 hour time weighted average is 0.1 f/cc

RELEASE OF ASBESTOS

- Asbestos is a hazard ONLY if it can release fibers (friable)
- Friable forms may be in pipe insulation, fireproofing, etc.
- Non-friable forms may be in floor tile, transite (unless machined or broken)

DAMAGE or DETERIORATION

- Water leaks, cutting or bumping, strong air currents, age
- Evidence: debris, ripped or cracked, delamination
- Report to ES&H immediately

DO'S

- Do presume that all pipe insulation, surfacing material and floor tile built before 1980 **DO** contain asbestos (See attached building report).
- Do check the Fermilab Asbestos Inventory - ES&H Shared Volume - IH Folder - Asbestos Folder - Inventory (If you do not have current access to this inventory, call *DAVE BAIRD* for "Read Access".) *DAVE BAIRD - X3945*
- Do notify contractors of the presence, location and quantity of asbestos containing material or potential asbestos containing material at the worksite.
- Do contact ES&H before working with suspicious material

DON'TS

- Don't use pipes lined with asbestos as a platform to work from
- Don't cut through pipe insulation
- Don't bump into sprayed on materials
- Don't disturb non-friable material
- Don't clean up, repair or dispose of suspicious looking material

10/2000

FERMILAB BUILDINGS AGE REPORT

FIMS #	Building Name	Year Built	Bldg Age
021	3 Sauk Circle - Dorm 7	1900	100
023	5 Sauk Circle - Residence	1900	100
024	6 Sauk Circle - Residence	1900	100
025	7 Sauk Circle - Residence	1900	100
031	14 Sauk Circle - Residence	1900	100
032	15 Sauk Circle - Residence	1900	100
033	17 Sauk Circle - Residence	1900	100
034	18 Sauk Circle - Residence	1900	100
036	1 Sauk Blvd - Aspen East	1900	100
520	Proton Pole Building	1900	100
803	Industrial Shed #2A	1900	100
930	Site 38 Barn	1900	100
949	Site 52 Barn	1900	100
986	Site #58 - Residence	1900	100
988	Site #58 - Barn	1900	100
992	Site 65 Barn	1900	100
998	Site 70 Barn	1900	100
943	Site 50, Building A	1905	95
944	Site 50 Barn	1905	95
945	Site 50, Building B	1905	95
946	Site 50 House	1905	95
947	Site 50, Building C	1905	95
951	Site 50, Waste Storage Bldg	1905	95
020	1 Sauk Circle - Residence	1910	90
022	4 Sauk Circle - Residence	1910	90
028	10 Sauk Circle - Residence	1910	90
030	13 Sauk Circle - Residence	1910	90
035	19 Sauk Circle - Residence	1910	90
070	1 Che Che Piqua - Kuhn Barn	1910	90
850	Super Shed/Lundy Barn	1910	90
942	Site 49 Barn	1910	90
948	Site 52 House	1910	90
019	11 Sauk Circle	1915	85
029	12 Sauk Circle - Residence	1920	80
902	Site 3 Barn	1920	80
904	Site 3 Shed	1920	80
906	Site 12 Barn	1920	80
911	Site 17 Barn	1920	80
912	Site 17 Shed	1920	80
994	Site 67 Barn	1920	80
026	8 Sauk Circle - Residence	1930	70
051	28b Sauk Blvd - Greenhouse	1930	70
055	30a Sauk Blvd - Pole Building	1930	70
976	Site #56 T&M Contractor House	1930	70
978	Site 56 Barn 1	1930	70
980	Site 56 Barn 2	1930	70
982	Site 56 Shed 1	1930	70
984	Site 56 Shed 2	1930	70

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914	Site 29 House	1932	68
918	Site 29 Shed 1	1932	68
920	Site 29 Shed 2	1932	68
916	Site 29 Garage	1933	67
027	9 Sauk Circle - Residence	1935	65
964	Site #55 - Coordination & Ops	1940	60
974	Site #55 - Ws-1 Waste Storage	1950	50
040	14 Sauk Blvd - Residence	1963	37
041	16 Sauk Blvd - Residence	1963	37
042	18 Sauk Blvd - Vending/Laundry	1963	37
043	20 Sauk Blvd - Residence	1963	37
044	1 Shabbona - Dorm 3	1963	37
045	22 Sauk Blvd - Residence	1963	37
046	24 Sauk Blvd - Residence	1963	37
047	24a Sauk Blvd - Garage	1963	37
048	26 Sauk Blvd - Residence	1963	37
049	28 Sauk Blvd - Residence	1963	37
050	28a Sauk Blvd - Garage	1963	37
053	29 Sauk Blvd - Residence	1963	37
054	30 Sauk Blvd - Maid Hdqtrs	1963	37
056	31 Sauk Blvd - Pump House	1963	37
058	33 Sauk Blvd - Residence	1963	37
059	34 Sauk Blvd - Residence	1963	37
077	13 Neuqua - Residence	1963	37
078	16 Neuqua - Residence	1963	37
079	18 Neuqua - Residence	1963	37
081	20 Neuqua - Lab 7 House	1963	37
082	22 Neuqua - Lab 7 House	1963	37
083	23 Neuqua - Residence	1963	37
084	25 Neuqua - Residence	1963	37
085	14 Neuqua - Lab 6 House	1963	37
086	26a Neuqua-Lab 6-Garage/	1963	37
087	28 Neuqua - Lab 6 House	1963	37
088	30 Neuqua - Lab 6 House	1963	37
090	32 Neuqua - Lab 6 House	1963	37
091	34 Neuqua - Lab 5 House	1963	37
092	36 Neuqua - Lab 5 House	1963	37
094	38 Neuqua - Lab 5 House	1963	37
095	36 Shabbona - Lab 5 House	1963	37
102	27a Winnebago - Lab 1 House	1963	37
103	27b Winnebago - Lab 1 House	1963	37
104	27c Winnebago - Lab 1 House	1963	37
106	32 Winnebago - Lab 4 House	1963	37
107	35a Winnebago-Lab 2 Compressor	1963	37
108	40 Shabbona-Lab 4 House/Office	1963	37
116	22 Blackhawk - Residence	1963	37
117	24 Blackhawk - Residence	1963	37
118	25 Blackhawk - Lab 8 House	1963	37
120	27 Blackhawk - Lab 8 House	1963	37

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121	29 Blackhawk - Residence	1963	37
122	31 Blackhawk - Lab 8 House	1963	37
124	33 Blackhawk - Lab 8 House	1963	37
125	35 Blackhawk - Residence	1963	37
131	2 Shabbona - Dorm 2	1963	37
132	8 Shabbona - Residence	1963	37
133	8a Shabbona Garage	1963	37
134	10 Shabbona - Residence	1963	37
135	12 Shabbona - Residence	1963	37
136	14 Shabbona - ES&H House	1963	37
137	14a Shabbona - Es&H Garage	1963	37
138	19 Shabbona - Residence	1963	37
140	21 Shabbona - Es&H House	1963	37
141	Curia I - 34 Shabbona	1963	37
142	33 Shabbona - Residence	1963	37
143	35a Shabbona - Lab 3 House	1963	37
144	35b Shabbona - Lab 3 House	1963	37
145	35c Shabbona - Lab 3 House	1963	37
146	35d Shabbona - Lab 3 House	1963	37
147	35e Shabbona - Lab 3 House	1963	37
150	39 Shabbona-Material Dev. Lab	1963	37
156	11 Potawatomi - Residence	1963	37
157	12 Potawatomi - Residence	1963	37
158	13 Potawatomi - Residence	1963	37
159	14 Potawatomi - Residence	1963	37
160	15 Potawatomi - Residence	1963	37
161	15 A Potawatomi Garage	1963	37
162	16 Potawatomi - Shower Rooms	1963	37
165	17 Potawatomi - Residence	1963	37
166	17a Potawatomi Garage	1963	37
167	18 Potawatomi - Residence	1963	37
169	20-A Potawatomi Dorm 4	1963	37
170	22 Potawatomi - Residence	1963	37
171	24 Potawatomi - Residence	1963	37
922	Site 38 Maintenance	1965	35
924	Site 38 Equipment Building	1965	35
936	Site 38 Hazardous Storage	1965	35
002	Main Ring Gazebo	1969	31
057	32 Sauk Blvd - Dorm 1	1969	31
060	36 Sauk Blvd - Metals Dev. Lab	1969	31
069	2 Che Che Pinqua-Users Center	1969	31
080	19 Neuqua - Residence	1969	31
089	28a Neuqua-Lab 6 Pole Building	1969	31
093	36a Neuqua - Lab 5 Pole Bldg.	1969	31
119	25a Blackhawk - Lab 8 South	1969	31
148	37a Shabbona-Material Dev. Lab	1969	31
149	37 Shabbona-Material Dev. Lab	1969	31
163	16a Potawatomi - Exercise Rms	1969	31
168	20 Potawatomi - Dorm 4	1969	31

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179	27 Winnebago - Lab 1	1969	31
181	35 Winnebago - Lab 3	1969	31
182	38 Shabbona - Lab 4	1969	31
183	36a Shabbona-Lab 5 Butler Bldg	1969	31
184	32a Neuqua- Lab 6 Butler Bldg.	1969	31
185	22a Neuqua-Lab 7 Butler Bldg.	1969	31
186	27a Blackhawk-Lab 8 Butler Bld	1969	31
852	Pine Street Guard House	1969	31
123	31a Blackhawk - Lab 8 North	1970	30
180	35 Winnebago-Lab 2 Butler Bldg	1970	30
206	Booster Gallery East & West	1970	30
212	Accelerator - Linac, X-Gallery	1970	30
220	A-1 Service Building	1970	30
221	A-2 Service Building	1970	30
222	A-3 Service Building	1970	30
223	A-4 Service Building	1970	30
224	B-O Service Building	1970	30
225	B-1 Service Building	1970	30
226	B-2 Service Building	1970	30
227	B-3 Service Building	1970	30
228	B-4 Service Building	1970	30
230	C-O Service Building	1970	30
231	C-1 Service Building	1970	30
233	C-2 Service Building	1970	30
234	C-3 Service Building	1970	30
235	C-4 Service Building	1970	30
238	D-0 Service Building	1970	30
240	D-1 Service Building	1970	30
241	D-2 Service Building	1970	30
242	D-3 Service Building	1970	30
243	D-4 Service Building	1970	30
245	E-0 Service Building	1970	30
246	E-1 Service Building	1970	30
248	E-2 Service Building	1970	30
249	E-3 Service Building	1970	30
250	E-4 Service Building	1970	30
251	F-0 (Rf) Service Building	1970	30
252	F-1 Service Building	1970	30
253	F-2 Service Building	1970	30
256	F-3 Service Building	1970	30
257	F-4 Service Building	1970	30
854	Master Sub-Station	1970	30
856	Batavia Road Guard House	1970	30
966	Site #55 - Janitorial Storage	1970	30
214	Central Utility Building	1971	29
218	A-O Service Bldg./Vehicle	1971	29
239	D-0 Vehicle Access Building	1971	29
283	Switchyard Service Building	1971	29
408	Meson Detector Building	1971	29

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105	29 Winnebago - Machine Repair	1972	28
508	Proton Service #1	1972	28
510	Proton Service #2	1972	28
800	Industrial Building #1	1972	28
801	Industrial Building #2	1972	28
804	Industrial Building #3	1972	28
855	Caseys Pond Pump House	1972	28
400	Meson Wonder Enclosure	1973	27
500	Proton Pagoda	1973	27
512	Proton Service #3	1973	27
001	Wilson Hall & Auditorium	1974	26
258	D0 Gas Shed	1974	26
259	B12 Gas Shed	1974	26
261	E0 Gas Shed	1974	26
402	Ms-1 Meson Service Building	1974	26
404	Ms-2 Meson Service Building	1974	26
406	Ms-3 Meson Service Building	1974	26
504	Proton Tagged Photon	1974	26
600	Neutrino Lab A	1974	26
602	Neutrino Lab B	1974	26
604	Neutrino Lab C	1974	26
606	Neutrino Lab D	1974	26
608	Neutrino Lab E	1974	26
614	Neutrino Lab Nwa	1974	26
616	Neutrino Service #1	1974	26
618	Neutrino Service #2	1974	26
622	Neutrino Service #4	1974	26
624	Neutrino Target Service	1974	26
625	Neon Compressor Building	1974	26
052	28c Sauk Blvd - R&G Equip Shed	1975	25
938	Receiving Warehouse #1	1975	25
506	High Intensity Laboratory	1978	22
514	Proton Service #4	1978	22
851	Central Helium Liquefier	1978	22
932	Site 38 Fire Station	1978	22
109	30 Winnebago - Machine Repair	1980	20
229	B-48 Kicker Building	1980	20
255	F-27 Power Supply Building	1980	20
299	A-1 Refrigeration Building	1980	20
300	A-2 Refrigeration Building	1980	20
410	Meson Central Cryogenics	1980	20
620	Neutrino Service #3	1980	20
805	Industrial Building #4	1980	20
941	Scale House	1980	20
237	C-48 Kicker Building	1981	19
247	E-17 Kicker Building	1981	19
254	F-23 Power Supply Building	1981	19
301	A-3 Refrigeration Building	1981	19
302	A-4 Refrigeration Building	1981	19

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303	B-1 Refrigeration Building	1981	19
304	B-2 Refrigeration Building	1981	19
305	B-3 Refrigeration Building	1981	19
306	B-4 Refrigeration Building	1981	19
307	C-1 Refrigeration Building	1981	19
308	C-2 Refrigeration Building	1981	19
309	C-3 Refrigeration Building	1981	19
310	C-4 Refrigeration Building	1981	19
311	D-1 Refrigeration Building	1981	19
312	D-2 Refrigeration Building	1981	19
313	D-3 Refrigeration Building	1981	19
314	D-4 Refrigeration Building	1981	19
315	E-1 Refrigeration Building	1981	19
316	E-2 Refrigeration Building	1981	19
317	E-3 Refrigeration Building	1981	19
318	E-4 Refrigeration Building	1981	19
319	F-1 Refrigeration Building	1981	19
320	F-2 Refrigeration Building	1981	19
321	F-3 Refrigeration Building	1981	19
322	F-4 Refrigeration Building	1981	19
934	Site 38 Extinguisher Bldg	1981	19
970	Site #55 - Ws-3 Waste Storage	1981	19
232	C-17 Kicker Building	1982	18
244	D-48 Kicker Building	1982	18
502	Proton Assembly	1982	18
516	Proton Service #5	1982	18
603	Rd T&M Shop	1982	18
853	Railsiding Storage Shed	1982	18
928	Site 38 HUS Building	1982	18
968	Site #55 - Vehicle Garage	1982	18
164	16b Potawatomi - Gynasium/	1983	17
323	Collider Detector Facility/Cdf	1983	17
518	Proton Service #6	1983	17
806	Industrial Center	1983	17
201	Ap30 Service Building	1984	16
202	Ap10 Service Building	1984	16
203	Ap50 Service Building	1984	16
204	Apo Target Hall	1984	16
324	G2 Service Building	1984	16
412	Meson Assembly Building	1984	16
414	Meson Service #4	1984	16
522	Exp Area Operations Ctr	1984	16
610	Laboratory F	1984	16
612	Laboratory G	1984	16
623	Neutrino Service Building #7	1984	16
809	Magnet Storage	1984	16
940	Receiving Warehouse #2	1984	16
613	Neutrino Service Building #E	1985	15
626	Wide Band Lab	1985	15

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628	Pb6/Pb7	1985	15
700	Muon Laboratory	1985	15
807	Industri Compressor Bldg	1985	15
972	Site #55 Ws-2 Waste Storage	1985	15
139	20 Shabbona Shelter	1986	14
207	Booster Tower Southwest	1986	14
208	Booster Tower Southeast	1986	14
236	C-4 Pump House	1986	14
416	Polarized Proton Lab - Mp	1986	14
418	Meson Service Ms7	1986	14
420	Meson West Lab -- MW9	1986	14
422	Meson Counting Bldg Mw9	1986	14
615	Neutrino Service #0	1986	14
325	Do Assembly Building	1987	13
921	Site 37 Shop	1987	13
003	Feynman Computer Center	1988	12
205	Ap50 Gas Storage Building	1988	12
923	Roads/Grounds Equip Stge	1988	12
925	Salt Storage Facility	1988	12
216	A0 Kicker Building	1990	10
217	Ao Lab Building	1990	10
926	Site 39	1990	10
931	Radiation Physics Calibration	1991	9
005	Science Education Center	1992	8
950	Site 52 Shed	1993	7
760	MI 60 Service Building	1994	6
929	Fuel Service Center	1994	6
630	KTeV	1995	5
710	MI 10 Service Building	1996	4
720	MI 20 Service Building	1996	4
730	MI 30 Service Building	1996	4
740	MI 40 Service Building	1996	4
750	MI 50 Service Building	1996	4
752	MI 52 Service Building	1996	4
762	MI 62 Service Building	1996	4
840	Low Level Waste Handling Bldg.	1996	4
096	26 Neuqua - Scintillator R&D	1997	3
708	MI 8 Service Building	1997	3
267	F-17 Service Building	1998	2
860	Kautz Road Sub-Station	1998	2
330	C0 Experimental Hall	1999	1
605	Lab C-D Cross Connect Building	1999	1

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LEAD

THOSE AFFECTED

Any work involving construction, alteration and/or repair, including painting and decorating. It includes, but is not limited to:

- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair, or renovation of structures that contain lead
- Installation of products containing lead
- Lead contamination/emergency cleanup
- Transportation, disposal, storage, or containment of lead or materials containing lead
- Maintenance operations associated with the construction activities described above

HEALTH EFFECTS OF LEAD

- Absorbed into body by inhalation and ingestion
- Accumulates in the blood, bones and organs
- Stays in bones for decades
- Can be released over time to cause toxic effects
- Early effects of lead poisoning resemble "flu-like" symptoms
- Cumulative exposure (typical in construction settings) may result in damage to the blood, nervous system, kidneys, bones, heart and reproductive system

SYMPTOMS OF LEAD POISONING

- | | |
|-----------------------------|---------------------------|
| • Weakness | • Headache |
| • Reproductive difficulties | • Poor appetite |
| • Nausea | • Dizziness |
| • Fine tremors | • Irritability/anxiety |
| • Blue line on the gums | • Constipation |
| • Hyperactivity | • Excessive tiredness |
| • Sleeplessness | • Numbness |
| • "Wrist drop" | • Metallic taste in mouth |
| • Pallor | • Muscle and joint pain |

MEDICAL SURVEILLANCE

Contractors must provide blood sampling and analysis to their employees who are or may be exposed to lead at or in excess of the action level ($>30 \text{ ug/M}^3$) on any day.

Contractors must provide a medical surveillance program (in accordance to 29 CFR 1926.62) to all of their employees who are or may be exposed to lead at or in excess of the action level ($>30 \text{ ug/M}^3$) for more than 30 days a year.

TRAINING REQUIREMENTS

Contractors must meet requirements of 29 CFR 1926.59 (Hazard Communication Standard for Construction Industry). Contractors are also responsible for supplying their employees with the proper training for their employees when the action level is exceeded ($>30 \text{ ug/M}^3$). This training must be in accordance to 29 CFR 1926.62. In instances where working with lead is unique to the contractor's task, the applicable divisional Fermilab ES&H section will provide training. This, however, must be determined on a case by case basis and be agreed upon before the contractor comes on site to work.

MONITORING

Where a determination shows the possibility of any contractor employee being exposed to lead at or above the action level, the contractor shall conduct monitoring which is representative to each employee's exposure. If the contractor has previously monitored for lead exposure where the data has been obtained within the past 12 months, and the workplace conditions closely resemble the present job at hand, the contractor may rely on the results to satisfy the requirements of 29 CFR 1926.62. These results should be reviewed by a Fermilab representative with technical expertise in the field of industrial hygiene before the results are considered acceptable.

PPE REQUIREMENTS

With exposures exceeding 50 ug/M^3 averaged over an 8 hour period, coveralls, gloves, hats, shoes or disposable shoe covers shall be worn. Respirators must be worn when an 8 hour time weighted average is equal to or exceeds 30 ug/M^3 .

Contractors are responsible for supplying their own employees with the proper PPE. In instances where working with lead is unique to the contractor's task, the applicable divisional Fermilab ES&H section will provide PPE. This, however, must be determined on a case by case basis and be agreed upon before the contractor comes on site to work.

DISPOSAL

A determination must be made either by process knowledge or by sampling as to whether lead containing compounds (either liquid or solid) are hazardous waste. If you are unsure, call your divisional ES&H representative.

Lead bricks, sheets, etc. can be scrapped if they are not radioactive. A Material Move Request form must first be filled out, and the material must be surveyed by a qualified individual before it is sent out as scrap.

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